

Engine 616 617

## Test values

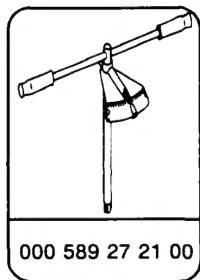
Engine	616,617
Start of delivery BTDC1	24° $\pm$ 1°

1) **Note:** Pull regulating lever of injection pump to full load stop during measurement and disconnect vacuum hose at vacuum unit.

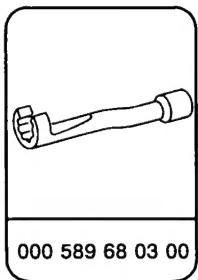
## Torque specifications (Nm)

Pipe connection	40
-----------------	----

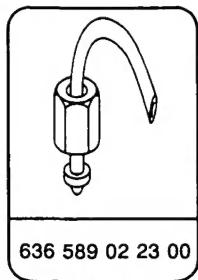
## Special tools



000 589 27 21 00

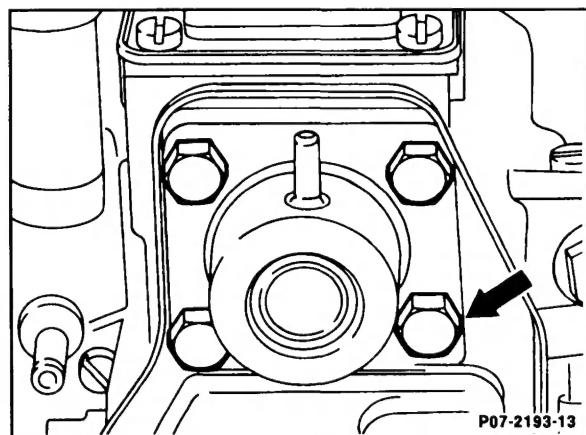


000 589 68 03 00



636 589 02 23 00

Disconnect vacuum hose at vacuum unit.



P07-2193-13



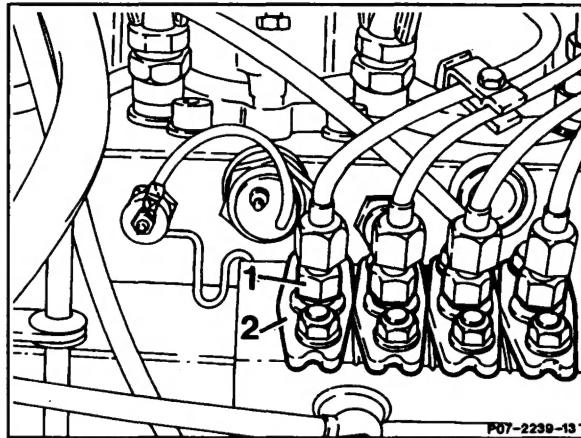
Unscrew pipe connection (1) of first injection pump element, remove compression spring and delivery valve.

Install pipe connection (1) without compression spring and delivery valve.

**Attention!** Do not slacken barrel-and-valve assembly (2).

Screw on overflow pipe.

**Pull regulating lever of injection pump to full load stop during measurement.**



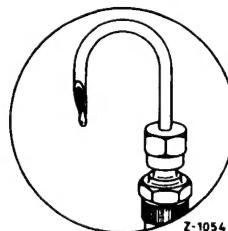
1 Pipe connection    2 Barrel-and-valve assembly

Turn crankshaft in direction of rotation until fuel just stops dripping.

This position represents start of delivery.

If injection timing has to be adjusted, refer to adjustment instructions

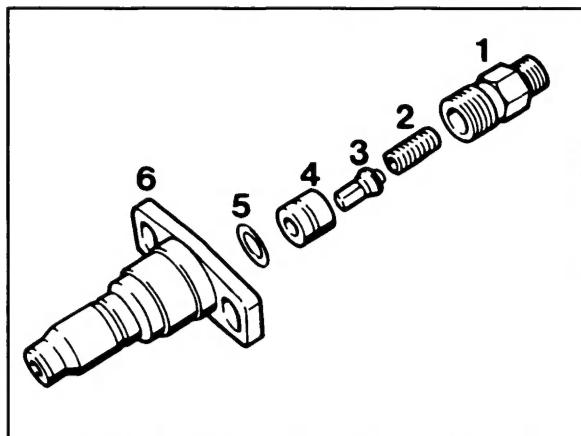
Remove overflow pipe and unscrew pipe connection.



Fit delivery valve, compression spring and pipe connection.

Torque pipe connection in one movement to 40-50 Nm.

Run engine and check for leaks. If a pipe connection leaks, it must be replaced. When fitting a new pipe connection, use **new** copper sealing ring under delivery valve holder.



Engine 601 602 603

**Test values**

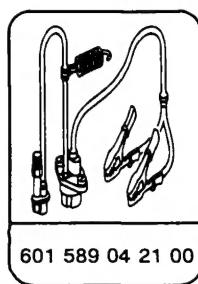
Indirect injection timing (after TDC)		
Model year	RI (reference impulse) checking value	RI (reference impulse) adjusting value
1984-89	$15^\circ \pm 1^\circ$	$15^\circ$
starting 1990	$14^\circ + 0.5^\circ$	$14^\circ + 0.5^\circ$

**Tightening torques (reference values)**

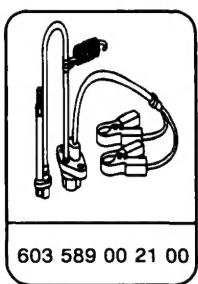
Nm

Closing plug to regulator (measuring point) 30-35

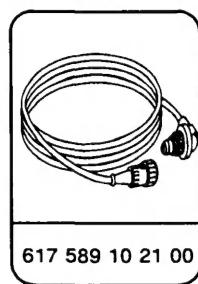
Injection pump flange 20-25

**Special tools**

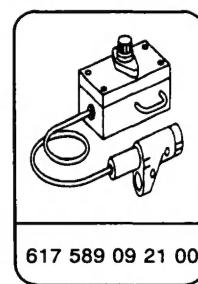
601 589 04 21 00



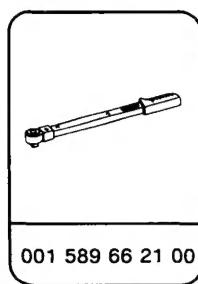
603 589 00 21 00



617 589 10 21 00



617 589 09 21 00



001 589 66 21 00

**Equipment****For use with adapter**

Digital testers

e.g. Bosch, ETD 019.00

e.g. Hartmann &amp; Braun, EOMT 3

**Equipment****For use without adapter**

Digital testers (Diesel tester)

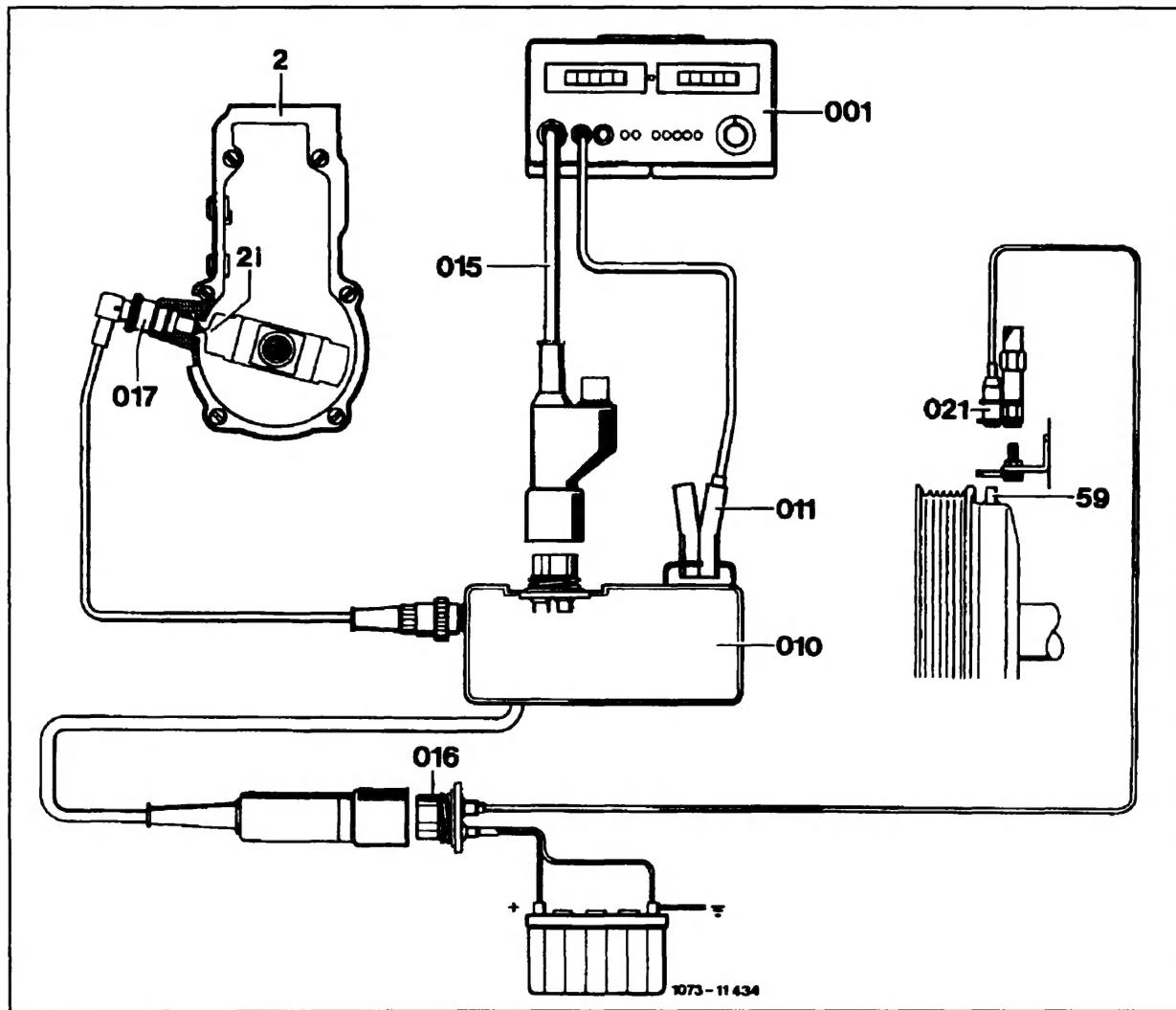
e.g. Bosch, ETD 019.00

e.g. Sun, DIT 9000

e.g. AVL, Diesel Tester 875



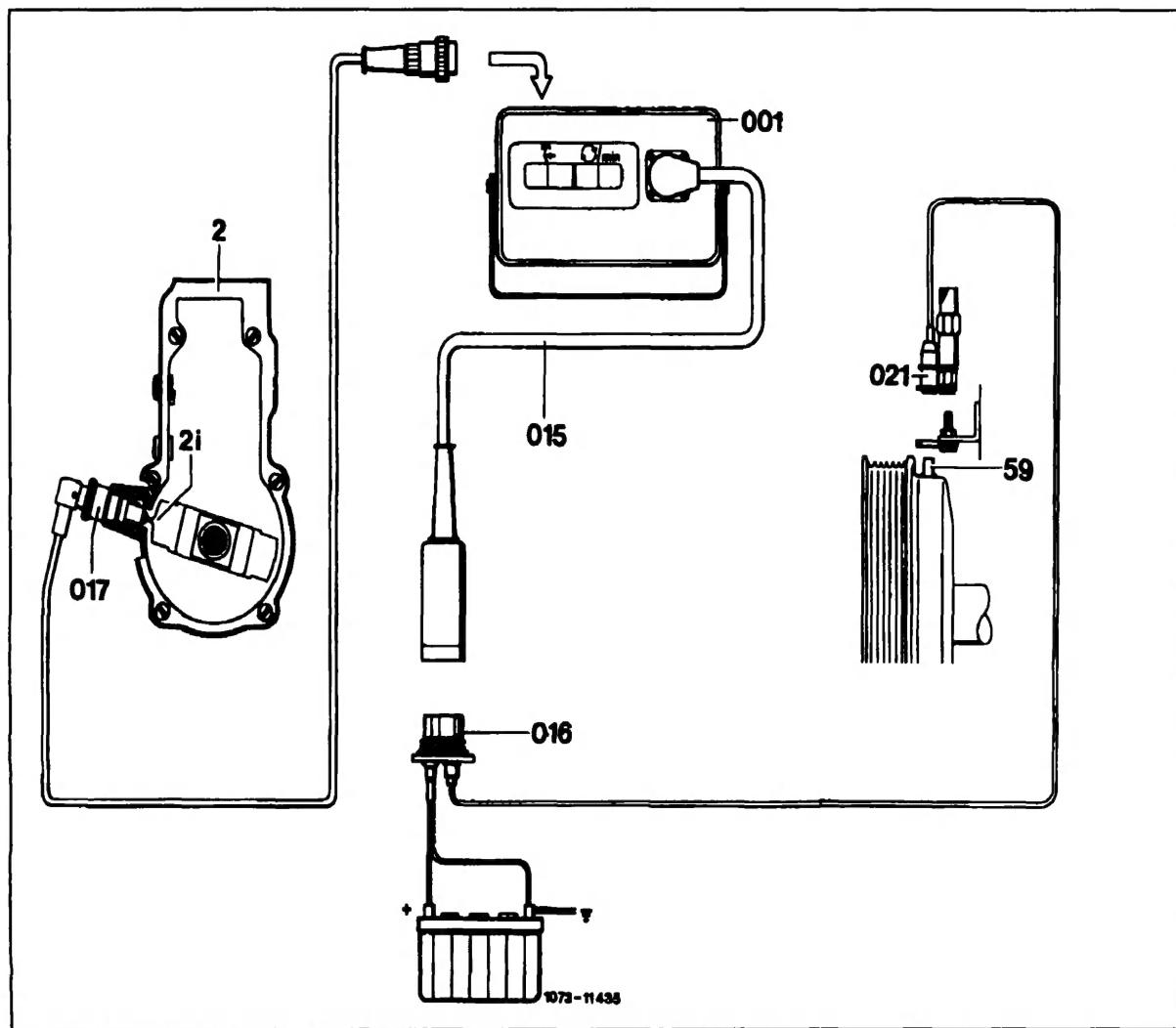
Connection diagram for available testers for use  
with adapter, e.g. Bosch MOT 001.03, Hartmann  
& Braun, EOMT 3



001	Digital tester
010	Adapter
011	Trigger clamp
015	Test cable with connector
016	Diagnostic socket
017	RI-transmitter
021	TDC-impulse transmitter

2	Governor
2i	RI-transmitter pin
59	TDC-transmitter

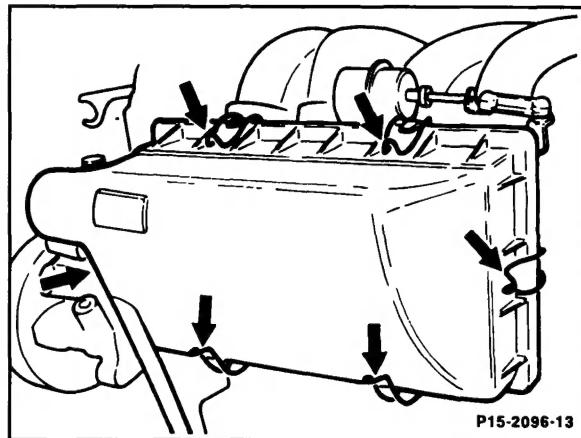
Connection diagram for testers for use without adapter,  
e.g. Bosch ETD 019.00, SUN DIT 9000, AVL Diesel-Tester 875



001	Digital tester	2	Governor
015	Test cable with connector	2i	RI-transmitter pin
016	Diagnostic socket	59	TDC-transmitter
017	RI-transmitter		
021	TDC-impulse transmitter		

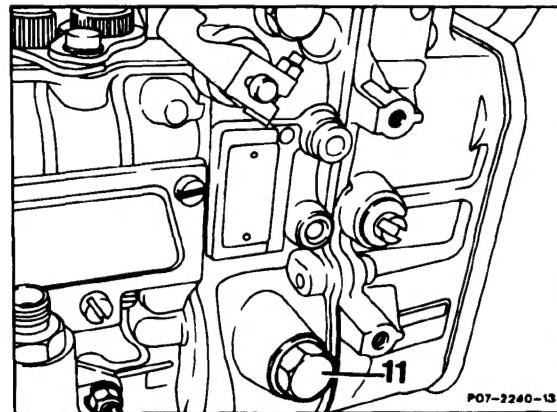
**Checking**

Remove air cleaner cover (arrows).

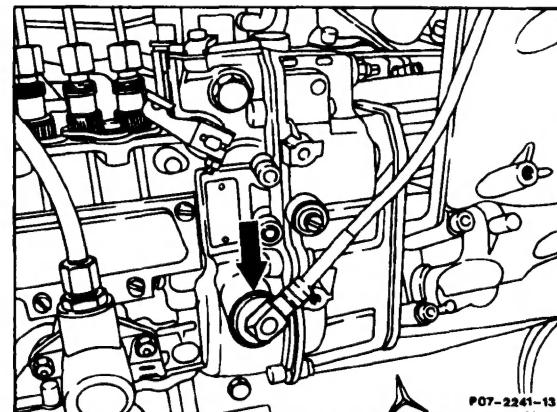


Remove plug (11) on governor.

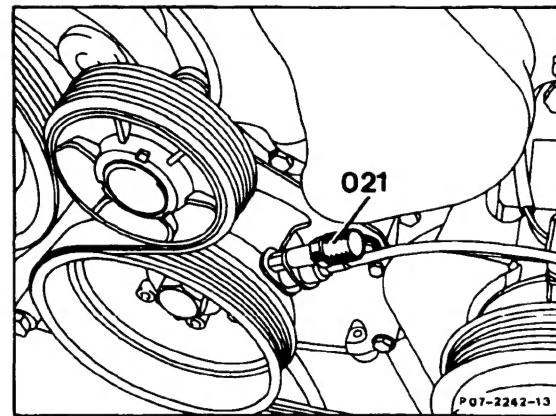
**Note:** Catch escaping oil.



Connect digital tester according to connection diagram.



017 RI-transmitter on governor (arrow)  
(injection pump)



021 TDC-impulse transmitter on holder  
Engine 601

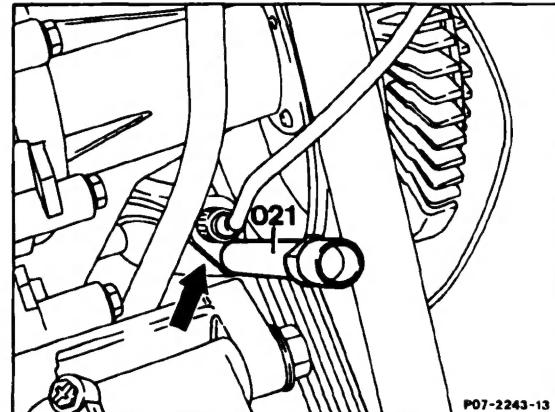
Read RI-value (indirect injection timing) at idle speed on digital tester.

**RI-nominal value:**

15° ATDC on 1984-89 models;  
14° + 0.5° ATDC on 1990 and later models.

Perform leak test with engine running.

Check engine oil level and correct, if required.



021 TDC-impulse transmitter on holder (arrow)  
Engines 602, 603

